

# ATOMIC ENERGY

newsletter

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Dear Sir:

David E. Lilienthal's resignation as Chairman of the United States Atomic Energy Commission (effective the end of this year) was accepted last week in Washington by President Truman "with the utmost regret". Mr. Lilienthal (said the President) dealt with a "problem of the greatest magnitude...involving complex physical aspects as well as momentous moral implications...and brought to his duties not only knowledge but wisdom". Widely regarded as one of the ablest public administrators of his time, Mr. Lilienthal's first Federal service was in 1933 with the Tennessee Valley Authority. In 1946, with Dean Acheson, he drew up proposals for the State Department, on American policy in international atomic control. Appointed AEC Chairman in October, 1946, he headed the Commission which had been set up to take over from the Army all control of atomic development. This past Summer, Senator Hickenlooper (Iowa) charged Mr. Lilienthal with "incredible mismanagement" of the U.S. atomic program. After an investigation by the Joint Congressional Committee on Atomic Energy, these charges were shown to be completely without foundation. In its written report, on the investigation, the Joint Committee outlined the exceptional progress the U.S. had made in atomic work under Mr. Lilienthal.

A new series of tests of atomic weapons is planned by the U.S., at the isolated Central Pacific proving grounds at Eniwetok Atoll. Purpose is field evaluation of the substantially improved atomic weapons that have been developed since the last tests made at Eniwetok in April and May, 1948. Informed quarters in Washington believe the tests will take place the early part of next year, although in making the announcement in Washington last week, the Department of Defense and the AEC emphasized that all activities connected with the tests, including the time, will be cloaked in secrecy. Joint Task Force-3 has been formed of Army, Navy, Air Force, and AEC people, to carry on the tests; Lt. Gen. E.R. Quesada will head it.

Highlighting the atomic energy activities of the United Nations Assembly (meeting at Lake Success, N.Y.), was the report last week by Assembly President Carlos P. Romulo that the Big Five powers, and Canada, have agreed to his previously stated demand for "open minded consideration" for all atomic control proposals. However, a State Department spokesman said in Washington last week that the U.S. policy will remain unchanged until a more effective plan is devised, than the one now up for consideration.

Progress made by the U.S. in the nuclear fission of hydrogen--which could be used to produce a bomb many hundred times more powerful than the Hiroshima atomic bomb--was disclosed in a telecast recently by Senator E. C. Johnson, member of the Joint Congressional Committee on Atomic Energy, which is presumably kept informed on the subject by the AEC. Johnson also said the present U.S. atomic bomb is six times more powerful than its 1945 type, and that the U.S. is working on methods to explode enemy atomic bombs before they reach their target. He also declared that the recent "atomic explosion" in the Soviet Union was of a plutonium bomb. The disclosures provoked President Truman to confer with Attorney General McGrath, and Joint Committee Chairman McMahon, on the question of security in the atomic program.

AT THE ATOMIC CITIES AND CENTERS IN THE UNITED STATES...

ARCO, Idaho- Major construction work on the experimental breeder reactor, for the nuclear reactor testing station here, will be done by Bechtel Corporation, San Francisco. Total cost of the reactor is expected to be \$3,500,000.00. Bechtel Corp., in a \$2,500,000.00 job, will build the steel, brick, and concrete reactor structure, as well as the control, ventilation, cooling and other auxiliary equipment. Nuclear design of the reactor has been completed by Argonne National Laboratory, Chicago, who will construct the reactor "core". This "fast" reactor will be used to test the practical feasibility of breeding with fast neutrons (transmuting non-fissionable uranium into fissionable plutonium in a process that produces more fissionable material than it consumes) and to investigate the use of liquid metals to remove fission-produced heat from reactors at high temperatures.

The materials testing reactor for the station here, on which detailed engineering work was begun last September by Blaw-Knox Construction Co., Pittsburgh (AEN 9/13/49), under a \$1,870,000.00 contract, will also be a "fast" reactor, and is expected to be in the construction phase by next Spring. Various reactor construction materials will be tested under the intense neutron bombardment it will provide. It is also of particular interest in the development of reactors for propulsion of aircraft since it will point to the compact, high radiation density reactors which are necessary if aircraft are to be propelled by atomic energy. Cost of this reactor has been estimated at \$25,000,000.00.

OAK RIDGE, Tennessee- Preliminary construction work on the new K-31 production unit for uranium-235 is now expected to get under way here before the end of the year. Fourth in a series of gaseous diffusion plants here (AEN 11/8/49, pge. 2), Maxon Construction Co., Dayton, will be prime contractors, with Giffels & Vallet, Inc., Detroit, as architect-engineers. Carbide & Carbon Chemicals Corp., operator of K-25 and K-27 (present uranium-235 producing plants), is doing process development and design on the new unit, and is responsible for procuring special production equipment and materials.

Industrial and government engineers and scientists will now be able to get advanced training in the field of reactor development at a newly established AEC Reactor Development Training School at the National Laboratory here. Admission will be governed by the need of the industrial organization for people with such training, the potential contribution of the individual to the AEC program, and his academic record. Dr. F. C. Von der Lage will head the school; inquiries concerning it should be addressed to him at Oak Ridge National Laboratory here.

Construction in the "controlled area" here of a new two-story laboratory building, to be used for studies in the nuclear energy field, has been opened by the AEC to bids by contractors, under invitation no. 401-50-3A. It will be in the electromagnetic (Y-12) plant vicinity; bid closing date is Dec. 30th.

RICHLAND, Washington- A new nuclear reactor for the production of plutonium has been put into operation here. It is an improved version of the existing reactors, which are low-temperature carbon-piles, water cooled, and fueled with natural uranium.

No apparent radioactive pollution of the Columbia river is resulting from the plutonium manufacturing operations at Hanford Works, the Columbia River Advisory Group to the AEC have now reported. The Group (made up of State and National health and sanitary officials), recently spent 2½ days surveying radioactive waste disposal processes here (AEN 11/22/49, pg. 2). They noted that radioactive waste disposal at Hanford Works is a major problem, and that every possible measure is being taken to cope with the task.

SANDIA BASE, Albuquerque, New Mexico- At this atomic bomb engineering center, some 2,000 of the military here, under the Armed Forces Special Weapons Project (AFSWP), are now learning to use and to integrate atomic weapons in the U.S.'s military picture. Meanwhile, some 1,800 men and women of the AEC and the Sandia Corporation, are engaged in developing, modifying, assembling, and producing atomic weapons, at the laboratories and other facilities here.

### PRODUCTS, PROCESSES & INSTRUMENTS...for nuclear work

Nuclear equipment manufacturers who displayed at the 22nd Exposition of Chemical Industries, held last week in New York, included S. Blickman, Inc., Weehawken, N.J. who showed their stainless steel low intensity dry box for handling radioisotopes and radioactive material-- National Technical Laboratories, S. Pasadena, Calif., with radiation detection meters and their model-B spectrophotometer on display-- E. H. Sheldon & Co., Muskegon, Mich., who showed their large fume hood for handling radioactive material--RCA, Scientific Instrument Div., exhibited their hand and foot radiation monitors (now in production for commercial sales), and their new count rate meter--General Electric Co., Special Products Div., demonstrated their beta-ray non-contacting thickness gauge--Cambridge Instrument Co., New York, showed their pocket gamma-ray dosimeters, with charging and reading units, and their precision ionization meter (Failla design)-- William Powell Co., Cincinnati, showed its packless, alloy, "Y" valves for controlling liquid metals at high temperatures, now in use for that purpose by the AEC, according to W. E. Heilig, V.P. in charge of research and development for Powell.

Uranium metal is now to be made available, for non-AEC use, to private research and industrial institutions in the U.S. A total of 200 pounds will be supplied by the Mallinckrodt Chemical Co., St. Louis, and will be stocked and sold in New York, at \$50.00 a pound, to AEC-licensees. It is believed sales may be limited to those in specialized metallurgical research. Inquiries for purchase of the metal should be directed to the AEC, Licensing Division, P.O. Box 30, Ansonia Station, N.Y.

High Voltage Engineering Corp., Cambridge, Mass., will export (with Government approval) a 2 Mev electrostatic X-ray generator to the Westminster Hospital, St. John's Gardens, London (England). This is the fourth such radiation therapy machine approved for export to England during the past two years.

Bid no. 734 to supply 1,200 various electrometer tubes has been asked by the Signal Corps Procurement Agency, 2800 So. 20th St., Phila, Pa. Part of the lot is to correspond to Raytheon type CK 571-AX, or equal--others, to Victoreen subminiature type 5803. Specifications, but not drawings, are available from Belmar, N.J. Bid closing date is Dec. 16th.

NEW INSTRUMENTS- Model D-1 radiation hazard survey meter (predecessors of which have been widely used and known as "Cutie Pie"). Ionization type, battery operated, pistol-grip instrument. Ion chamber approx. 600 c.c. in volume; constructed of bakelite tubing. For beta and gamma radiation of 50 KEV or greater. Ranges: 0-50; 0-500; 0-5,000 mr/hr. Manufacturer claims accuracy to within 10% of full scale, on all scales.--Radioactive Products, Inc., 3201 E. Woodbridge St., Detroit 7, Mich.

Model 2111 portable alpha proportional counter. Detects only alpha radiation, in the presence of other radiation. Several types of probes available. Pushbutton control resets meter after exposure to a strong alpha source, eliminating the usual lag under such conditions. Four tube circuit; chassis removable for servicing. --Nuclear Instrument and Chemical Corp., 223 W. Erie St., Chicago 10, Ill.

### ATOMIC PATENT DIGEST...latest U.S. & British applications & grants...

Beryllium brazing apparatus. Pat. application No. 27,863, submitted Oct. 31st, 1949, to Brit. Pat. Off., by Machlett Laboratories, Inc. (U.S., Dec. 11, 1948.)

System of geophysical prospecting. A radiation detector, in the stem of the drill being used, indicates, by measuring their radioactivity, the nature of the formations being penetrated by the borehole. U.S. Pat. No. 2,487,058, issued Nov. 8th, 1949, to S. Krasnow, Arlington, Va., and L. F. Curtiss, Montgomery County, Md., assignor by mesne patent to said Krasnow.

Producing beryllium fluoride from siliceous beryllium ore, by treating the ore with hydrogen fluoride. U.S. Pat. No. 2,487,270, issued Nov. 8th, 1949, and assigned to Aluminum Co. of America.

Nitrogen purification process, using uranium nitride to remove (the contaminating) oxygen from the nitrogen. U.S. Pat. No. 2,487,360, issued Nov. 8th, 1949, to A.S. Newton, Ames, Iowa, and assigned to U.S. of America (Atomic Energy Commission).

### IONIZING RADIATION...investigations & notes...

Changes in the coagulability of human blood, after radiation therapy, have been investigated by S. B. Silverman, at Royal Victoria Hospital, Canada. In the work, ten patients, receiving radiation therapy at the Royal Victoria Hospital, for various neoplastic conditions, were followed at regular intervals during their treatment. Each patient received approximately 300 r per day; blood samples were taken one to two hours after treatment. Silverman found that, in these dosages, the coagulability of the blood was decreased by radiation, with the trend roughly proportional to the total irradiation received.

The distribution and action of a radioactive oxazine dye (Nile blue 2-B), in tumor-bearing mice, has been investigated by H. A. Slovitzer, M.D., at the School of Medicine, University of Pittsburgh. In this work (which was the first direct evaluation made of the therapeutic activity of this radioactive dye), the investigator found that the administration of this dye, either orally or parenterally, to tumor-bearing mice, resulted in marked prolongation of the life of these mice. The prolongation by the radioactive dye was also found to be significantly greater than by the same non-radioactive dye.

Radioactive cobalt (cobalt-60), which has been under investigation as a possible substitute for radium in the treatment of cancer, is now being used experimentally for the treatment of selected types of cancer of the womb, in humans, at the School of Medicine, Ohio State University. It will require several years, however, to determine in proper perspective the relation between cobalt-60, and radium, in the treatment of cancer, since the effectiveness of cancer treatment cannot be determined except over periods of from 5 to 10 years.

Radioactive phosphorous is being used in the laboratories of Metallisation, Ltd., Dudley (England), to ionize air and make use of the resultant conductivity produced. The need arose during the course of work on an electric arc pistol. When an arc was struck, between two conductors in the pistol, and the molten metal produced blown away with air, the ordinary air, because of its insulating properties, tended to disrupt the arc. It was found that, by passing the source air over radioactive phosphorous it became electrically conductive, and showed a lesser tendency to disrupt the arc.

### RADIOISOTOPES...applications...

With a 100% increase in the use of radioisotopes for commercial purposes, since this time last year, there are now six organizations in this country incorporating the pure radiochemicals from Oak Ridge into complex compounds such as sugars, proteins, or dyes. More than 65 different compounds are being produced in this class. Some recent radioisotope uses include:

Radiocobalt (cobalt-60) is being used by the U. S. Testing Co., Hoboken, N.J., in comparative tests of wearing characteristics of floor wax. Other problems worked on by UST have dealt with plastics, textiles, paper, paint, and the metallurgy fields.

Radiophosphorous (phosphorous-32) is being used by the B. F. Goodrich Research Center, Brecksville, Ohio, in an attempt to trace leaks in the cooling water of an air conditioning line. Other work by Goodrich has been directed to the effects of nuclear radiation on rubber products.

At the physical research division of the Eli Lilly Co., Indianapolis, it is planned to use the ground mole as an experimental animal for infantile paralysis research. This animal is believed preferable to laboratory animals, since it will live in its natural state and not under laboratory conditions. Since little is known of the habits of the ground moles, they will be "tagged" with radiocobalt in order to find out where they burrow, the distances they travel, and other habits.

The Borden Company Laboratory, Scarsdale, N.Y., and the Lankenau Hospital Research Institute, Philadelphia, are attempting to learn how cows synthesize sulphur-containing amino acids in milk proteins. Radiosulphur will be used to determine to what extent these amino acids are formed in the rumen, or first stomach, of the animal.



AT NUCLEAR INSTALLATIONS...outside the United States...

FRANCE- One milligram of plutonium has been produced in the French nuclear reactor at Chatillon, according to a communique of the French Atomic Energy Commission. The Chatillon reactor, which began operation December 15th, 1948, uses heavy water imported from Norway as a moderator. As the production of this amount of plutonium confirms, and as previously announced, it operates at nearly zero energy. A larger reactor, at Saclay, will have an output of 1,000 Kilowatts.

GREAT BRITAIN- A new establishment will augment Britain's atomic energy program. Under the Ministry of Supply (counterpart of the USAEC), survey work at a site at Capenhurst, near Chester, has begun. Construction work, which at its peak will employ several thousand men, will start next year. The establishment will ultimately employ an operating force of a similar size.

Capenhurst will be the sixth atomic energy establishment in England. Other facilities are Harwell (research), Risley (design headquarters), Springfields (uranium refining), Windscale Works, Sellafield (plutonium reactor), and the Radiochemical Center, Amersham (radioisotope packing and distributing center).

RAW MATERIALS...for nuclear processes...

UNITED STATES- A radioactive vein at the Old Dad property in the Gold Butte district in Nevada has reportedly assayed 1% uranium oxide. The Gold Butte area is 48 miles from Riverside, on the Virgin river...On the strength of radioactive material found in the dump of the Standard mine (previously worked for its copper-cobalt ore), near Prairie City, in Grant County, Oregon, work on opening the 1400-foot level tunnel is being continued.

CANADA- The Canadian guaranteed minimum buying price for contained uranium, formerly \$2.75 a pound, has been raised by 10%, Minister of Trade C. D. Howe recently announced. Now, Eldorado Mining and Refining, Ltd., the official government buying agency, will pay Canadian producers a minimum of \$3.00 a pound for contained uranium oxide. This is in line with other exports which were raised 10% in the recent devaluation move...Dr. C. J. Mackenzie, Chairman of the Atomic Energy Control Board of Canada, told the House of Commons Atomic Committee that the Canadian atomic project (Chalk river establishment) uses only a moderate amount of the uranium ore produced in Canada. He said the bulk goes to the United States.

BELGIAN CONGO- The uranium ore output of the Belgian Congo is expected to be doubled by the end of 1950, with a new processing plant now under construction by the Union Miniere du Haut-Katanga at the Shinkolobwe pitchblende pits; the plant is scheduled to go into operation by next June. Now estimated at 12,000 tons a year, the uranium ore output of the Belgian Congo goes largely to the United States. (Assurances were recently given the U.S. that there would not be any interruption in this supply. AEN 11/8/49, pgs. 1).

BOOKS & PAMPHLETS...in the nuclear field...

Radioactive Tracer Techniques--by George K. Schweitzer, University of Tennessee, and Ira B. Whitney, Oak Ridge National Laboratory. 242 pgs., 13 figs.--D. Van Nostrand Co., Toronto, N.Y., and London.

Pharmacology and Toxicology of Uranium Compounds--Voegtlin & Hodge, editors. Vols. 1 and 2, div. VI, National Nuclear Energy Series. Vol. 1, 524 pgs.; Vol. 2, pgs. 525 to 1084.--McGraw-Hill Book Co., New York.

Atomic Medicine; Radioactivity in Peace and War--Edited by C. F. Behrens, M.D., Captain, U.S.N., director, atomic defense division, Bureau of Medicine and Surgery, U.S.N. 432 pgs., 20 contributors. Thomas Nelson & Sons, New York.

Measurements of Radioactivity--by Leon F. Curtiss, National Bureau of Standards. 84 pages, illustrated. U. S. Government Ptg. Off., Wash., D. C.

Sincerely,

The Staff,  
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